A

A549   A549
WT   Rβ

IL-18Rα

IL-18Rβ

GAPDH

B

C

D

NK4

GAPDH

Cont IL-18

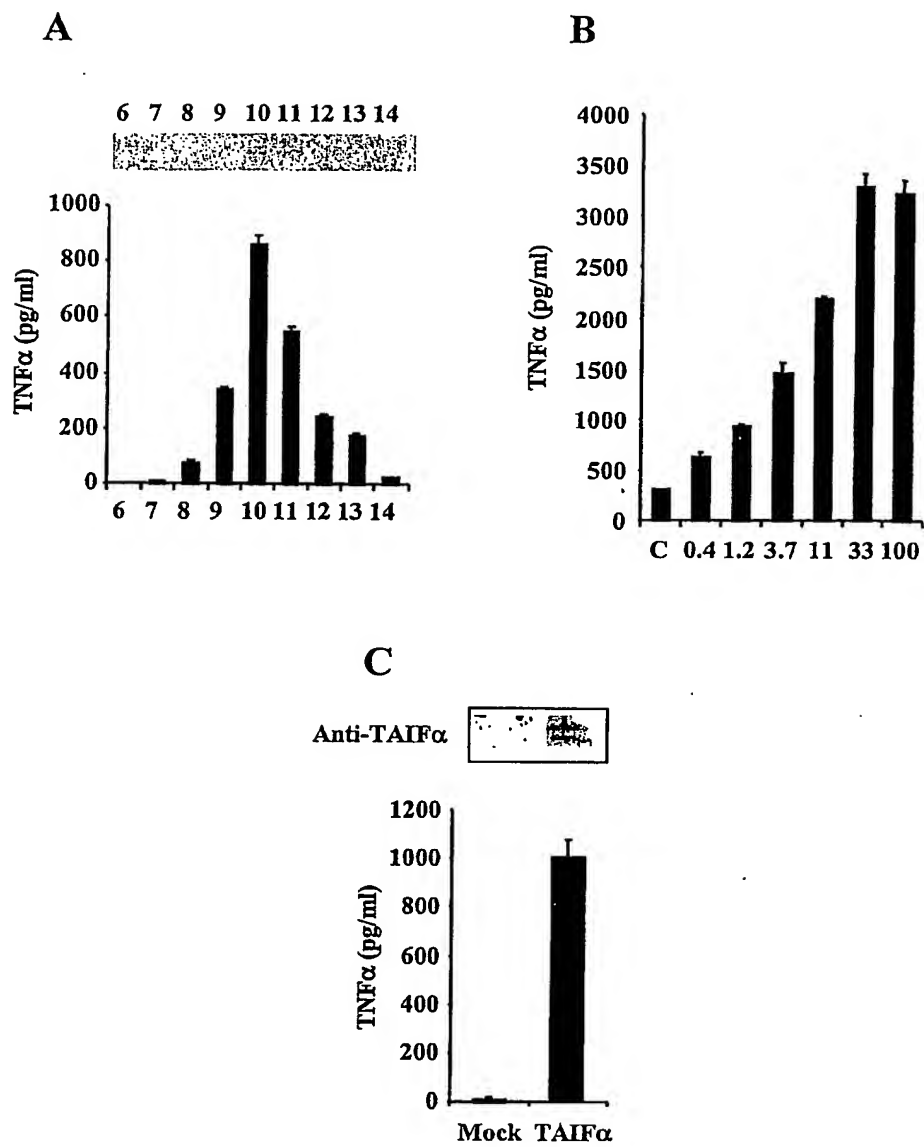**Fig. 1**

Fig. 2

```
IL-32α   ATGTGCTTCCCGAAGGTCCTCTCTGATGACATGAAGAAGCTGAAGGCCCGAATG------
IL-32β   ATGTGCTTCCCGAAGGTCCTCTCTGATGACATGAAGAAGCTGAAGGCCCGAATG------
IL-32γ   ATGTGCTTCCCGAAGGTCCTCTCTGATGACATGAAGAAGCTGAAGGCCCGAATGGTAATG
IL-32δ   --------------------------ATGAAGAAGCTGAAGGCCCGAATG------

IL-32α   ------------------------------------------------------------
IL-32β   ------------------------------------------------------------
IL-32γ   CTCCTCCCTACTTCTGCTCAGGGGTTGGGGGCCTGGGTCTCAGCGTGTGACACTGAGGAC
IL-32δ   ------------------------------------------------------------

IL-32α   ------------------------------------------------------------
IL-32β   ------------------------------------------------------------
IL-32γ   ACTGTGGGACACCTGGGACCCTGGAGGGACAAGGATCCGGCCCTTTGGTGCCAACTCTGC
IL-32δ   ------------------------------------------------------------

IL-32α   -----------CACCAGGCTATAGAAAGATTTTATGATAAAATGCAAAATGCAGAATCA
IL-32β   -----------CACCAGGCCATAGAAAGATTTTATGATAAAATGCAAAATGCAGAATCA
IL-32γ   CTCTCTTCACAGCACCAGGCCATAGAAAGATTTTATGATAAAATGCAAAATGCAGAATCA
IL-32δ   -----------CACCAGGCCATAGAAAGATTTTATGATAAAATGCAAAATGCAGAATCA

IL-32α   GGACGTGGACAGGTGATGTCGAGCCTGGCAGAGCTGGAGGACGACTTCAAAGAGGGCTAC
IL-32β   GGACGTGGACAGGTGATGTCGAGCCTGGCAGAGCTGGAGGACGACTTCAAAGAGGGCTAC
IL-32γ   GGACGTGGACAGGTGATGTCGAGCCTGGCAGAGCTGGAGGACGACTTCAAAGAGGGCTAC
IL-32δ   GGACGTGGACAGGTGATGTCGAGCCTGGCAGAGCTGGAGGACGACTTCAAAGAGGGCTAC

IL-32α   CTGGAGACAGTGGCGGCTTATTATGAGGAGCAGCACCCAGAGCTCACTCCTCTACTTGAA
IL-32β   CTGGAGACAGTGGCGGCTTATTATGAGGAGCAGCACCCAGAGCTCACTCCTCTACTTGAA
IL-32γ   CTGGAGACAGTGGCGGCTTATTATGAGGAGCAGCACCCAGAGCTCACTCCTCTACTTGAA
IL-32δ   CTGGAGACAGTGGCGGCTTATTATGAGGAGCAGCACCCAGAGCTCACTCCTCTACTTGAA
```

Fig. 3A

IL-32α   AAAGAAAGAGATGGATTACGGTGCCGAGGCAACAGATCCCCTGTCCCGGATGTTGAGGAT
IL-32β   AAAGAAAGAGATGGATTACGGTGCCGAGGCAACAGATCCCCTGTCCCGGATGTTGAGGAT
IL-32γ   AAAGAAAGAGATGGATTACGGTGCCGAGGCAACAGATCCCCTGTCCCGGATGTTGAGGAT
IL-32δ   AAAGAAAGAGATGGATTACGGTGCCGAGGCAACAGATCCCCTGTCCCGGATGTTGAGGAT

IL-32α   CCCGCAACCGAGGAGCCTGGGGAGAGCTTTTGTGACAAG--------------------
IL-32β   CCCGCAACCGAGGAGCCTGGGGAGAGCTTTTGTGACAAGGTCATGAGATGGTTCCAGGCC
IL-32γ   CCCGCAACCGAGGAGCCTGGGGAGAGCTTTTGTGACAAGGTCATGAGATGGTTCCAGGCC
IL-32δ   CCCGCAACCGAGGAGCCTGGGGAGAGCTTTTGTGACAAGGTCATGAGATGGTTCCAGGCC

IL-32α   --
IL-32β   ATGCTGCAGCGGCTGCAGACCTGGTGGCACGGGGTTCTGGCCTGGGTGAAGGAGAAGGTG
IL-32γ   ATGCTGCAGCGGCTGCAGACCTGGTGGCACGGGGTTCTGGCCTGGGTGAAGGAGAAGGTG
IL-32δ   ATGCTGCAGCGGCTGCAGACCTGGTGGCACGGGGTTCTGGCCTGGGTGAAGGAGAAGGTG

IL-32α   --
IL-32β   GTGGCCCTGGTCCATGCAGTGCAGGCCCTCTGGAAACAGTTCCAGAGTTTCTGCTGCTCT
IL-32γ   GTGGCCCTGGTCCATGCAGTGCAGGCCCTCTGGAAACAGTTCCAGAGTTTCTGCTGCTCT
IL-32δ   GTGGCCCTGGTCCATGCAGTGCAGGCCCTCTGGAAACAGTTCCAGAGTTTCTGCTGCTCT

IL-32α   ----------------------------------TCCTACGGAGCCCCACGGGGGGACAAGGAG
IL-32β   CTGTCAGAGCTCTTCATGTCCTCTTTCCAGTCCTACGGAGCCCCACGGGGGGACAAGGAG
IL-32γ   CTGTCAGAGCTCTTCATGTCCTCTTTCCAGTCCTACGGAGCCCCACGGGGGGACAAGGAG
IL-32δ   CTGTCAGAGCTCTTCATGTCCTCTTTCCAGTCCTACGGAGCCCCACGGGGGGACAAGGAG

IL-32α   GAGCTGACACCCCAGAAGTGCTCTGAACCCCAATCCTCAAAATGA
IL-32β   GAGCTGACACCCCAGAAGTGCTCTGAACCCCAATCCTCAAAATGA
IL-32γ   GAGCTGACACCCCAGAAGTGCTCTGAACCCCAATCCTCAAAATGA
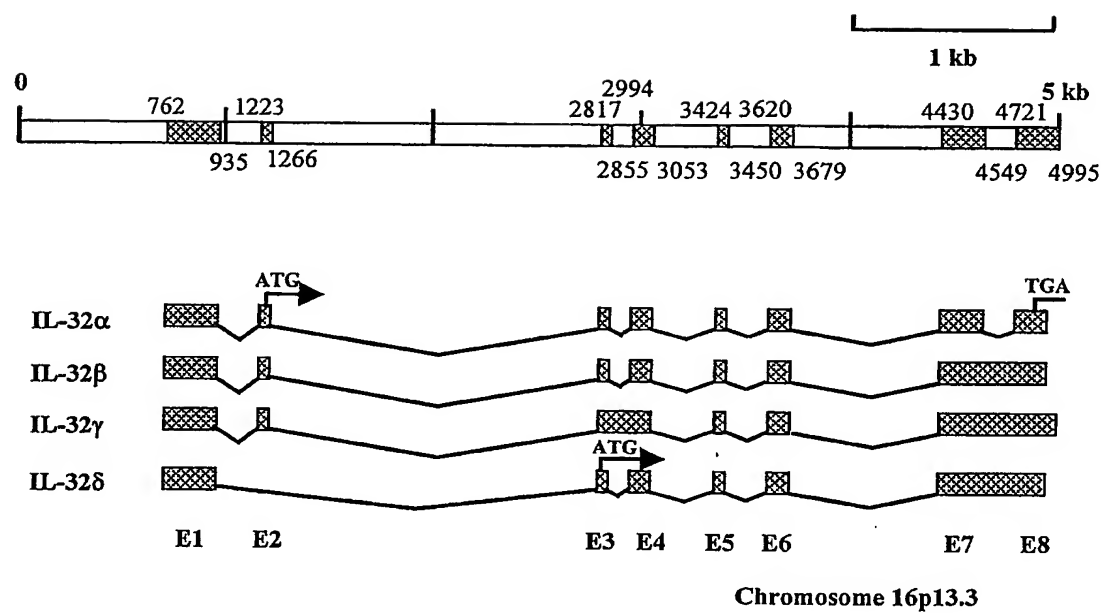IL-32δ   GAGCTGACACCCCAGAAGTGCTCTGAACCCCAATCCTCAAAATGA

Fig. 3B

A

```
              1                                          Myr
IL-32α        MCFPKVLSDDMKKLKARM-----------------------------------------
IL-32β        MCFPKVLSDDMKKLKARM-----------------------------------------
IL-32γ        MCFPKVLSDDMKKLKARMVMLLPTSAQGLGAWVSACDTEDTVGHLGPWRDKDPALWCQLC
IL-32δ        ---------MKKLKARM-----------------------------------------
```

```
              61                                         Myr
IL-32α        ----HQAIERFYDKMQNAESGRGQVMSSLAELEDDFKEGYLETVAAYYEEQHPELTPLLE
IL-32β        ----HQAIERFYDKMQNAESGRGQVMSSLAELEDDFKEGYLETVAAYYEEQHPELTPLLE
IL-32γ        LSSQHQAIERFYDKMQNAESGRGQVMSSLAELEDDFKEGYLETVAAYYEEQHPELTPLLE
IL-32δ        ----HQAIERFYDKMQNAESGRGQVMSSLAELEDDFKEGYLETVAAYYEEQHPELTPLLE
```

```
              121           Gly
IL-32α        KERDGLRCRGNRSPVPDVEDPATEEPGESFCDK--------------------------
IL-32β        KERDGLRCRGNRSPVPDVEDPATEEPGESFCDKVMRWFQAMLQRLQTWWHGVLAWVKEKV
IL-32γ        KERDGLRCRGNRSPVPDVEDPATEEPGESFCDKVMRWFQAMLQRLQTWWHGVLAWVKEKV
IL-32δ        KERDGLRCRGNRSPVPDVEDPATEEPGESFCDKVMRWFQAMLQRLQTWWHGVLAWVKEKV
```

```
              181                                      Myr
IL-32α        ------------------------------SYGAPRGDKEELTPQKCSEPQSSK
IL-32β        VALVHAVQALWKQFQSFCCSLSELFMSSFQSYGAPRGDKEELTPQKCSEPQSSK
IL-32γ        VALVHAVQALWKQFQSFCCSLSELFMSSFQSYGAPRGDKEELTPQKCSEPQSSK
IL-32δ        VALVHAVQALWKQFQSFCCSLSELFMSSFQSYGAPRGDKEELTPQKCSEPQSSK
```

B

```
              1
huIL-32β      MCFPKVLSDDMKKLKARMHQAIERFYDKMQNAESGRGQVMSSLAELEDDFKEGYLETVAA
EqIL-32       MGYPKTSREDNERWKIRFHSTLDRWLDDIEVQSQGEEQVDLGLEDLEEKFSENILDAVEE
BoIL-32       MCFAKGVPYDQASLRSIMHKRVDDFCDKMGNEPE-EAQMEAALDETEEGLSEDICEFIED
Consensus     *---*----*------------------*-----------------*---*----*--------
```

```
              61
huIL-32β      YYEEQHPELTPLLEKERDGLRCRGNRSPV----PDVEDP----ATE--EPGESFCDKVMR
EqIL-32       HHQKNNSESAPLLPDVKPRLRRRAQKSSVLNPEPEGPGILQVEALEAPEPEESFWVRAWR
BoIL-32       HIQENLPES--LQESSPL-LQEARQGVRRRIQRPSV-----SARLEVQNPEESI----WA
Consensus     -------*---*--------*-----------------*------------*---*-**-----*-
```

```
              121
huIL-32β      WFQAMLQR-L-QTWWHGVLAWVKEKVVA------LVHAVQALWKQFQS---FCCSLSELF
EqIL-32       SFMGMLQR-LKQRWQAVLA-WVREKVAAGWQA---LCSVAQSINSVLES---FCSYMAGLF
BoIL-32       RALGRFQVIL-QSLQQRC--WDALTWLREKAVTFLEAICSVVKAVLGVLTDFCSSVGQLF
Consensus     ------*--*-*--------*------------*-----------------**-----**
```

```
              181
huIL-32β      MSSF---QSYGAPRGDKEELTPQKCSEPQSSK
EqIL-32       RYH---IQV-----------------------
BoIL-32       ---GNLIQV-----------------------
Consensus     -------*------------------------
```

Fig. 4

Fig. 5

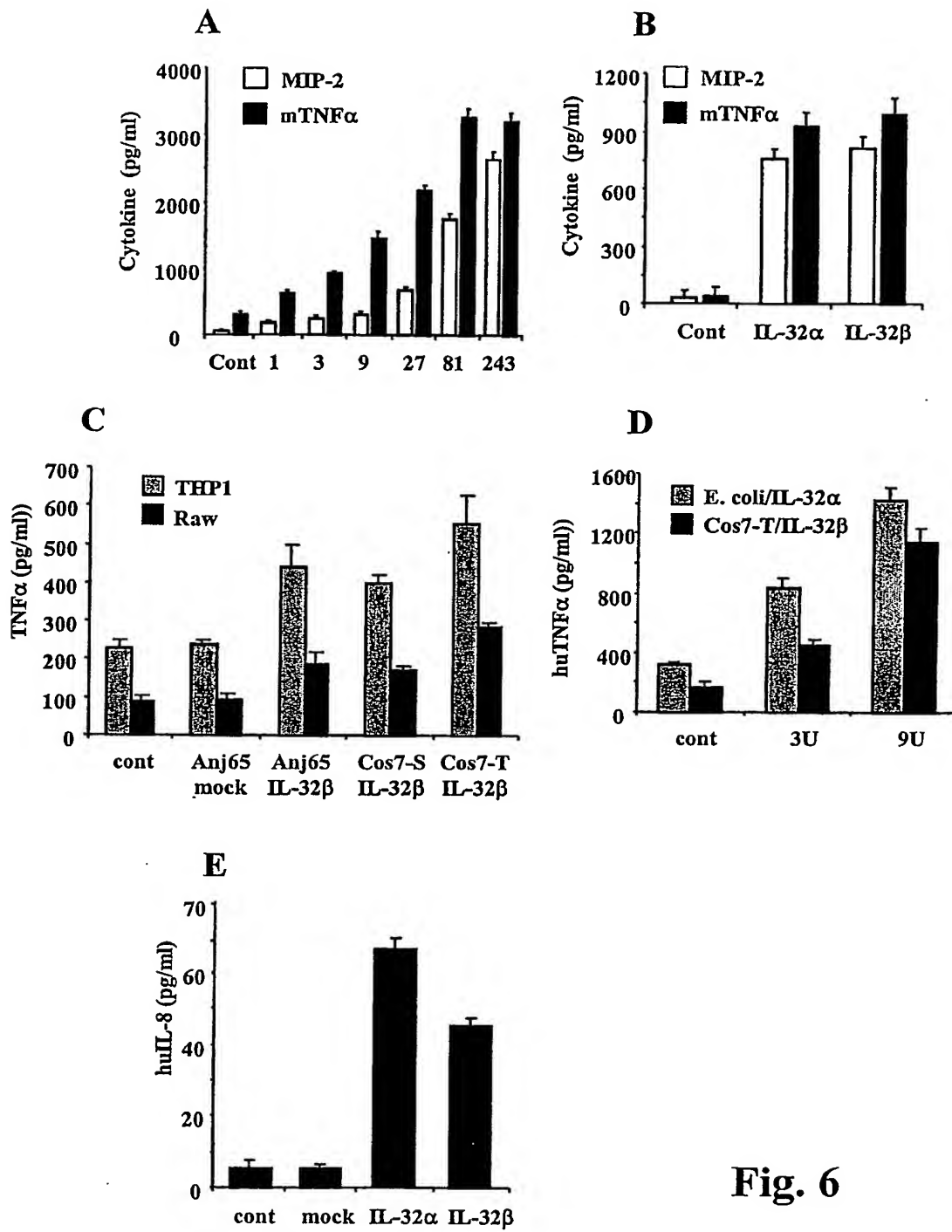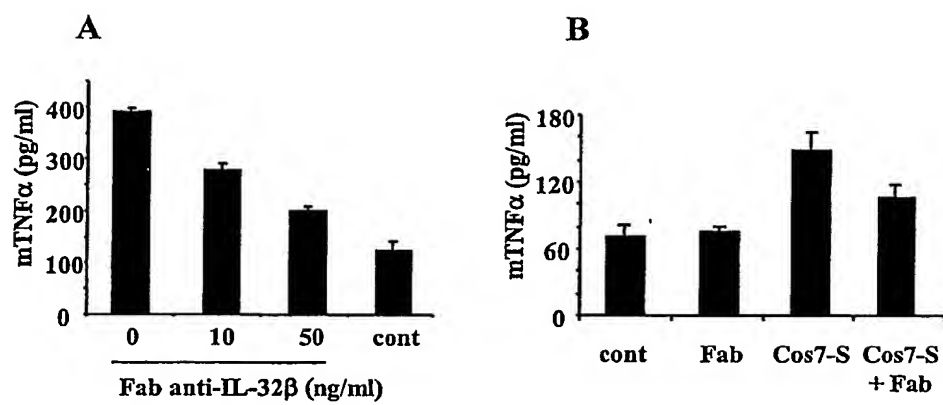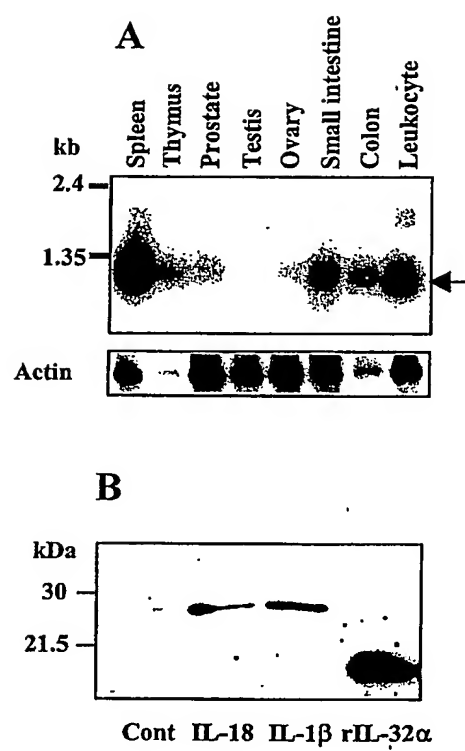Fig. 6

Fig. 7

Fig. 8

A

hours	1		3		6		22		46	
IFNγ	−	+	−	+	−	+	−	+	−	+

IL-32

Actin

B

IL-18   IL-1β

0   60   120   0   60   120

IL-32

Actin

C

IL-18   IL-1β

0   60   120   0   60   120

IL-32

Actin

D

kDa   mock   IL-32α   IL-32β

30 −

21 −

E

kDa   mock   IL-32α   IL-32β

30 −

21 −

Actin

F

□ supernatant
■ lysate

IL-32 (pg/ml)

1600

1200

800

400

0

mock   IL-32α   IL-32β

Fig. 9

Fig. 10

A

| | 0 | 5 | 15 | 30 | 45 | 60 | 90 | 120 |

IκB

Actin

B

| | 0 | 5 | 15 | 30 | 45 | 60 | 90 | 120 |

Ⓟ-p38 MAPK

p38 MAPK
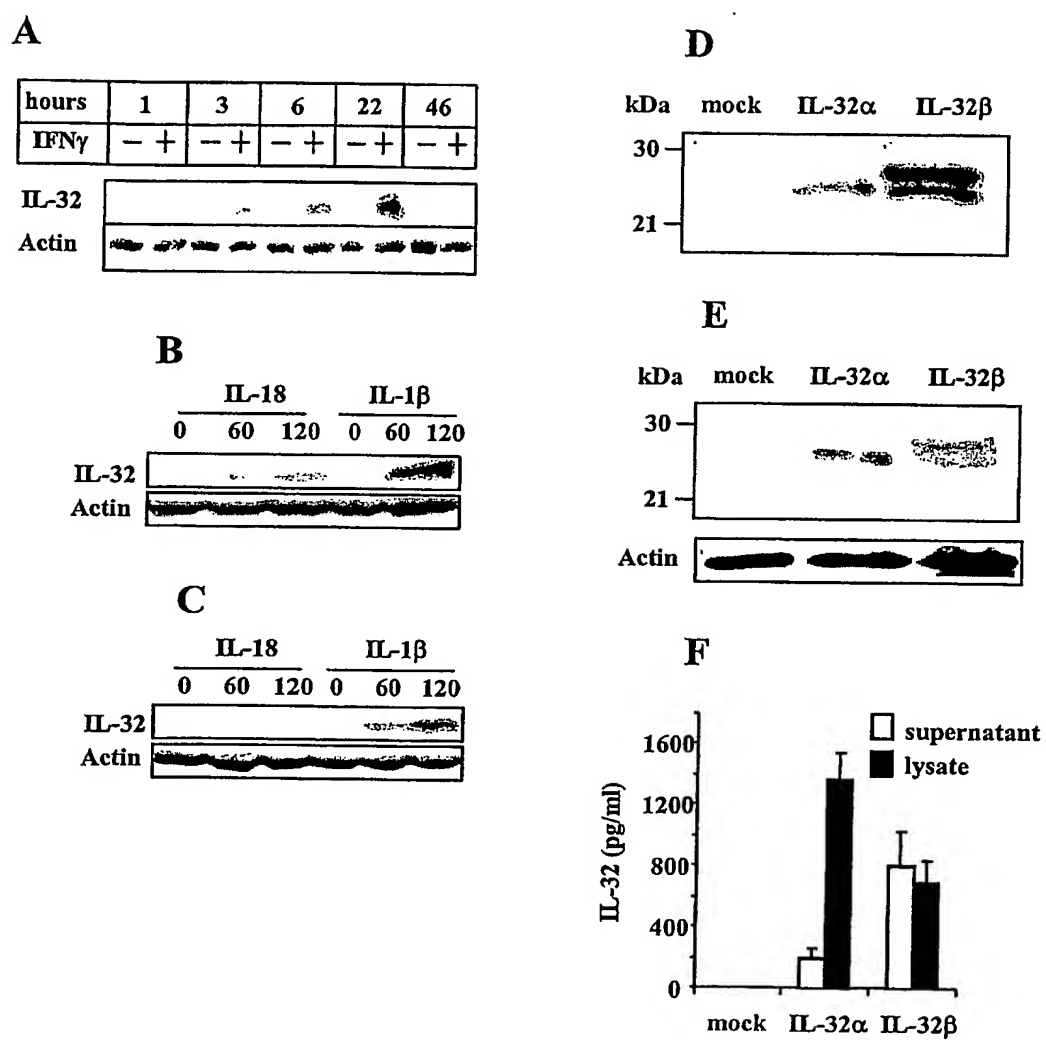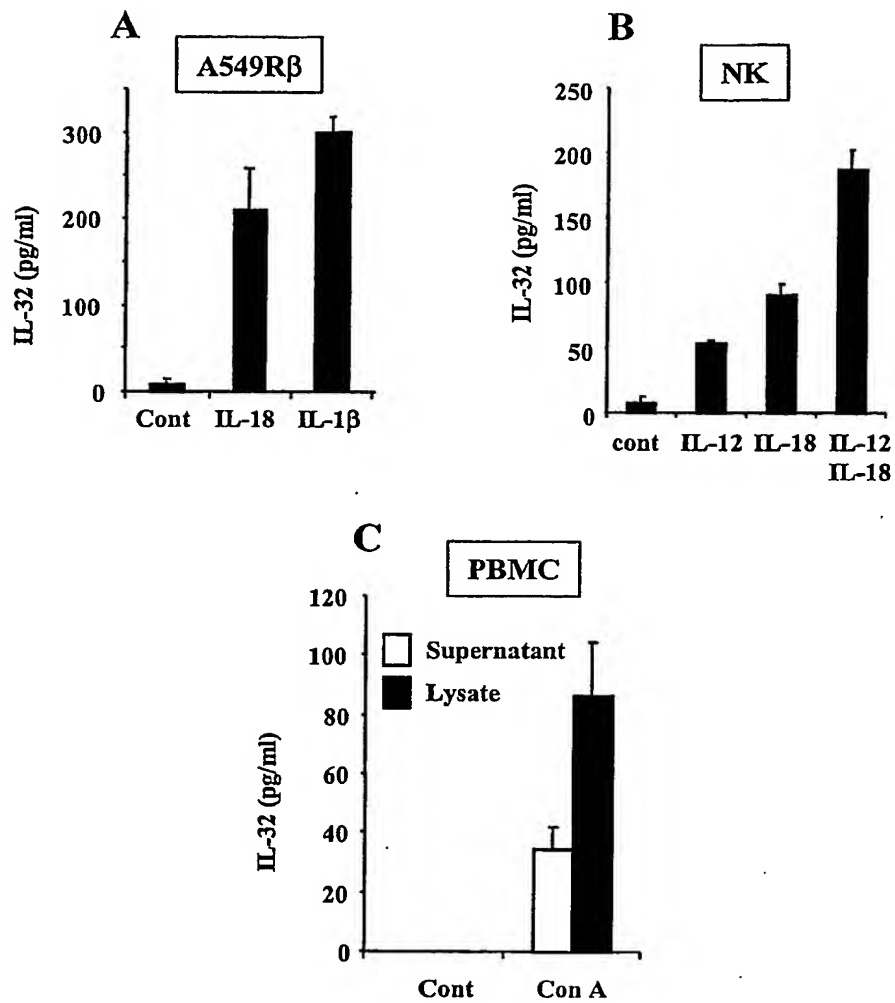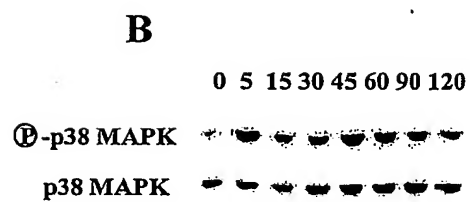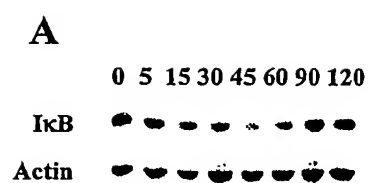
Fig. 11

A

EqIL-32 alpha (SEQ ID NO:18)

MGYPKTSREDNERWKIRFHSTLDRWLDDIEVQSQGEEQVCQCAPTPCSRNLGGRVVTMTMRRKNVPPQVD
LGPLTSPFSQRTFRSDLCHLPTLDLSLTTSLTSLLCTAWPPCPPCTSCSGFLLQV

B

EqIL-32 alpha (SEQ ID NO:19)

GCACGAGCTCGTGCCGTGTGCTGAGAGGCCCTTGGGGCAGGCACAGCCCCTGGAATCCTGAGCTGCCATG
GGCTACCCCAAGACGTCCAGAGAAGACAATGAACGTTGGAAGATCCGATTTCACAGCACTTTAGACCGGT
GGCTTGATGATATCGAAGTTCAATCCCAAGGAGAGGAACAGGTGTGTCAGTGTGCTCCCACGCCCTGCTC
CCGTAACCTCGGGGGTCGGGTGGTCACGATGACGATGAGGAGGAAGAACGTGCCACCTCAGGTCGATTTA
GGCCCTTTGACGTCCCCCTTTTCACAGAGAACCTTCAGAAGTGACCTTTGCCACCTGCCTACCCTTGACC
TGTCCTTGACCACCTCCCTCACCTCCTTGCTGTGCACAGCCTGGCCACCCTGCCCACCATGCACTTCCTG
CTCAGGTTTCCTTCTGCAGGTCTGACTTGTGGCTCCAGCGCATATGTCTTAATAAAGTTGTG

C

EqIL-32 beta (SEQ ID NO:16)

MGYPKTSREDNERWKIRFHSTLDRWLDDIEVQSQGEEQVDLGLEDLEEKFSENILDAVEEHHQKNNSESA
PLLPDVKPRLRRRAQKSSVLNPEPEGPGILQVEALEAPEPEESFWVRAWRSFMGMLQRLKQRWQAVLAWV
REKVAAGWQALCSVAQSINSVLESFCSYMAGLFRYHIQV

D

EqIL-32 beta (SEQ ID NO:20)

CTGAGAGGCCCTTGGGGCAGGCACAGCCCCTGGAATCCTGAGCTGCCATGGGCTACCCCAAGACGTCCAG
AGAAGACAATGAACGTTGGAAGATCCGATTTCACAGCACTTTAGACCGGTGGCTTGATGATATCGAAGTT
CAATCCCAAGGAGAGGAACAGGTCGATTTAGGCCTAGAAGACCTGGAGGAAAAATTCAGTGAAAACATTC
TTGACGCCGTGGAGGAGCACCATCAGAAGAACAACTCAGAATCTGCGCCTTTACTTCCTGACGTGAAGCC
CAGGTTACGTCGCAGAGCTCAGAAGTCCTCTGTCCTCAACCCTGAACCTGAGGGTCCAGGGATCCTGCAA
GTTGAGGCTCTAGAGGCACCCGAGCCTGAAGAAAGCTTTTGGGTCAGAGCATGGAGGTCGTTCATGGGGA
TGCTACAGCGACTGAAGCAGAGGTGGCAGGCTGTACTGGCCTGGGTGCGAGAGAAGGTGGCTGCTGGCTG
GCAGGCCCTATGCAGTGTGGCCCAGTCCATTAATAGTGTGCTTGAGAGTTTCTGCTCCTATATGGCTGGG
TTGTTTAGGTACCACATCCAGGTCTAGGGGGCCCCATGGGGTCCAGGAGGGGTAGCCACACCTTGCAGCC
CTTTGACGTCCCCCTTTTCACAGAGAACCTTCAGAAGTGACCTTTGCCACCTGCCTACCCTTGACCTGTC
CTTGACCACCTCCCTCACCTCCTTGCTGTGCACAGCCTGGCCACCCTGCCCACCATGCACTTCCTGCTCA
GGTTTCCTTCTGCAGGTCTGACTTGTGGCTCCAGCGCATAGTCTT

Fig. 12

A

BoIL-32 beta (SEQ ID NO:17)

MCFAKGVPYDQASLRSIMHKRVDDFCDKMGNEPEEAQMEAALDETEEGLSEDICEFIEDHIQENLPESLQ
ESSPLLQEARQGVRRRIQRPSVSARLEVQNPEESIWARALGRFQVILQSLQQRCWDALTWLREKAVTFLE
AICSVVKAVLGVLTDFCSSVGQLFGNLIQV

B

BoIL-32 beta (SEQ ID NO:21)

CGGATTCCCGGGATGCTCAGCTGGAGCTCTGGCTGCAGGATCTCAGGTCCCTTCGGGAGGACCCTAAGCC
ACCATGTGCTTCGCTAAGGGAGTCCCATATGACCAGGCTTCTCTGAGGTCCATAATGCACAAACGGGTGG
ATGATTTCTGTGATAAGATGGGAAATGAACCAGAAGAAGCACAGATGGAGGCAGCCCTAGATGAGACGGA
GGAGGGACTCAGCGAGGACATCTGTGAATTCATAGAAGATCACATTCAAGAGAACCTTCCCGAATCCCTG
CAGGAGTCCAGTCCCTTGCTTCAGGAAGCACGGCAAGGAGTACGCCGCAGAATCCAGAGACCTTCAGTCT
CTGCCCGTCTGGAGGTCCAGAATCCGGAAGAGAGCATCTGGGCCAGAGCCCTGGGGAGGTTCCAAGTAAT
TCTGCAGAGTCTCCAGCAGCGGTGTTGGGATGCGCTCACCTGGCTGCGGGAGAAGGCGGTGACCTTCCTG
GAGGCCATCTGCAGTGTGGTGAAGGCCGTCTTGGGAGTGCTGACGGATTTCTGCTCCTCTGTGGGGCAGC
TCTTCGGAAACCTCATCCAGGTCTAGGAGCCGCAGGTGGTTCTGGAGGAACTCCTCCTCATCTAGGAGGC
CCTGCACCATCCCCTTCCCAGAAACCATCTTGTGAAGCGACCTTTGCACTCCTGCTCACCCTTGACCCAT
CCTTTAACTGCCCTCACCTCCTGT

C

BoIL-32 gamma (SEQ ID NO:22)

MCFTKRDPRVLASFRVLMVRSSFPRIAGVREAWVLLGEAENILAHLGPSREKNRDSFTQVHLCSQHNLVD
EFFDTMENEPEGAQMEAVLAETKEKFIKDAFKVMDNHIQENSPETLKESSPLLQEARQEVRCRIQRRSVS
TSLEVQNPEESIWARALRQFLGILQSFLSGCRDALTWLWEKAAACLQAICSAVEALWEVLTDFCSFVGQL
LCRSLIQV

D

BoIL-32 gamma (SEQ ID NO:23)

CGGGATCTCAGCTGGAGCTCTGGCTGCAGGATCTCAGGTCCCAGCGGCAGGACCCTAAGCCACCATGTGC
TTCACTAAGAGAGACCCACGTGTCCTGGCTTCTTTCAGGGTGTTAATGGTAAGAAGCTCATTTCCACGTA
TAGCTGGGGTTCGGGAGGCCTGGGTTCTGCTGGGTGAAGCTGAGAACATTCTGGCCCACTTGGGACCCAG
CAGGGAGAAGAACCGAGATTCTTTTACTCAAGTCCATCTCTGTTCACAGCACAACCTTGTAGATGAATTT
TTCGATACAATGGAAAATGAACCAGAAGGAGCACAGATGGAGGCAGTCCTAGCAGAGACTAAGGAGAAAT
TCATCAAGGACGCCTTTAAAGTCATGGATAATCACATTCAAGAGAACAGTCCCGAAACCCTGAAGGAGTC
CAGTCCCTTGCTTCAGGAAGCACGGCAAGAAGTACGCTGCAGAATCCAGAGACGCTCCGTCTCCACCTCT
CTGGAGGTCCAGAATCCGGAAGAGAGCATCTGGGCCAGAGCCCTGCGGCAGTTCTTGGGCATTCTGCAGA
GTTTCCTGTCCGGGTGTCGGGATGCGCTCACCTGGCTGTGGGAGAAGGCCGCGGCCTGCCTACAGGCCAT
CTGCAGTGCGGTGGAGGCCCTCTGGGAAGTGCTCACGGATTTCTGCTCCTTTGTTGGGCAGCTCTTATGC
AGAAGCCTCATCCAGGTCTAAGAGCCTCACATGGTTCTGGAGGAGCCCCACCTCATTCAGAAGGCCCTGT
ACGATGCCCTTCCCGGAAACCATCTTCTGAAGCGACCTTTACCCTCCTGCTCACCCTTGACCCATCCTTT
AACTGCCCTCCCCTCCTGTCCTG

Fig. 13

A

OvIL-32 alpha (SEQ ID NO:24)

MCFARGVPHDQASLRSMLHTWVDHVCDKMGNEPEEAQMEAALAEMEEELSKDVCESWKITFKRTFPNPCR
SPVPCFRKRSKKYAAESRDPQSLPVWRTRNRKRASGPEPCGGSEVFCGVSGSGVAMY

B

OvIL-32 alpha (SEQ IDO:25)

CTGCGGTACCGGTCCGGATTCCCGGGCGAGACAGTGCTCAGCTGGAGCTCTGGCTGCAGGATCTCAGATC
CCAGCCGGAGGACCCTAATCCACCATGTGCTTCGCTAGGGGAGTCCCACATGACCAGGCTTCTCTGAGGA
GCATGCTGCACACCTGGGTGGATCATGTCTGTGATAAGATGGGAAATGAACCAGAAGAAGCACAGATGGA
GGCAGCCCTAGCAGAGATGGAGGAGGAACTCAGCAAGGATGTCTGTGAATCATGGAAGATCACATTCAAG
AGAACCTTCCCGAATCCCTGCAGGAGTCCAGTCCCTTGCTTCAGGAAGCGCAGCAAGAAGTACGCCGCAG
AATCCAGAGACCCTCAGTCTCTGCCTGTCTGGAGGACCAGAAACCGGAAGAGAGCATCTGGGCCAGAGCC
CTGCGGCGGTTCCGAGGTTTTCTGCGGAGTCTCTGGCAGCGGTGTTGCGATGTACTGACCTGGCTGCAGG
AGAAGGCGGCGGCCTGCCTGGAGGCCGTCTGCAGTGCGGTGAAGACCATCTGGGGAGTGCTGACGGATTT
CTGCTCCTCTGTGGGGCAGCTCTTCAGAAACCTCATCCAGGTCTAGGAGCCCCAGGTCGTTCTTGAGGAA
CTGCTCCTCATCTAGAAGGCCCTGCACAATCCCCTTCCCAGAAACCATCTTCTGAAGCGACCTTTACCCT
CCTGTTCACCCTTCACCAATCCTTTAACTGCCCTCACCTCCTGTCTGCAGGGACGACACCACAACATCAA
GCCAGGTTTCCCTTCTCCAAGTCTGACCCGTCTGTCAGGGA

C

SwIL-32 alpha (SEQ ID NO:26)

MRGVSATRTLPKAGPQPRSGLGLPLPRRVPEPPPIPAESSPLLNEVRQGVRSRVRRPPGHNQPHYALAVR
EPRQSTFRRILELFEEMLKRLQQRWRGALAWVQERAAACFRGLCRALEAFWSLVQSFCSSMGHAFGSVIQ
V

D

SwIL-32 alpha (SEQ ID NO:27)

ATGACTTGGAGGGGAACTGAGCGGCCAGGCCCAGCCCCTGGGAAAAGTCCTGGGGTCTGTGGGGCTGTTG
GCAGGAAAGCAGCCTGTGTCCAAGGCGGGGCATGAGGGGGGTGTCTGCCACCAGGACTCTCCCAAAGGCA
GGGCCTCAGCCAAGGTCAGGACTGGGGCTGCCTCTCCCCAGGCGGGTCCCTGAACCACCCCCCATCCCTG
CAGAATCCAGTCCTCTGCTCAACGAAGTCCGGCAGGGAGTCCGTTCTAGAGTCCGAAGGCCTCCTGGCCA
CAACCAGCCACATTATGCGCTAGCGGTCCGGGAGCCCAGGCAGAGCACTTTCAGACGCATCCTTGAGCTG
TTTGAGGAAATGCTGAAGCGCCTGCAGCAGAGGTGGAGGGGTGCCCTGGCTTGGGTGCAGGAAAGGGCTG
CTGCCTGCTTCCGGGGCTTGTGCAGGGCCCTTGAAGCTTTCTGGAGCCTGGTGCAGAGTTTTTGCTCCTC
CATGGGCACGCCTTCGGGAGTGTCATCCAGGTCTAAGGTGCTCCAGGTGAAATAAGAGTTTCTAGAGCA
CAACCTCCCCCTGCCTTGGCTAAAAAGGCAGCTGTAAGCCTTT

Fig. 14